

## INCIDENCES OF FOOT DISEASES OF CATTLE IN BIHAR, INDIA

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### ABSTRACT

The Bihar, a state of India with 12.56 million cattle population is a source of livelihood to the poor people, but due to foot disorders the farmers face a considerable amount of economic loss. To find out the types of disorder, limb affected, breed, sex, age group, season etc, the study was carried out for 34 months in different places in the state. The result revealed that out of 2791 surveyed animals 489 (17.52%) was affected by various foot disorders. Highest incidences were of overgrown hooves (6.66%) followed by scissors claw (3.30%), cracked hoof (2.29%), bruising of sole (1.26%), interdigital lesions (1.11%) and other disorders include swelling /wound at heel, congenital defects, traumatic injury, chronic laminitis, interdigital growth etc. Involvement of fore limb was more (8.31%) than the hind limb (7.24%) and both limbs (1.97%). Crossbred animals were more affected (24.74%) than the nondescript (13.05). Females were less affected (15.72%) than males (20.16%). Adult animals (20.42%) were more susceptible than young animals (11.43%). Seasonal effect was more during monsoon (5.27%), followed by post-monsoon (4.76%), pre- monsoon (4.34%) and lowest was in winter months (3.15%). The foot disorders in cattle may be prevented with better management practices like good nutrition, housing management and health care etc.

**KEYWORDS:** Foot, Disorders, Cattle, Hoof, Age, Breed, Sex, Season

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### INTRODUCTION

The Bihar state comprises 12.56 million of cattle which is 6.31% of total cattle population of India. Crossbred cattle count 15.73% and annual growth rate of total cattle population is 4.02% in Bihar. The average annual rainfall in Bihar is 1205 mm. The area expands from Latitude 25°11'N and Longitude 85°32' E. Bihar's land has average elevation above sea level is 173 feet. Foot diseases of animals may occur due to unscientific management system particularly poor housing and health management and also unhygienic condition prevailing in animal shed or due to environmental and nutritional factors. Buragohain (2012) opined that the causes of lameness are multi-factorial in nature involving managemental, nutritional and genetic factors impacting the structural and functional integrity of the hoof. The foot diseases cause a great economic loss to the farmers. Bagate *et al.* (2012) observed milk production reduced as severity of hoof lesions and pain increased. Hoof disorders to milk loss up to 31.66 percent of entire lactation. Abid *et al.* (1989) opined that the foot diseases are one of the most neglected

conditions affecting bovines. Foot disease is a highly important economical and animal welfare issue (Whay and Watermann, 1998; Whay and Main, 2003). The incidences of bovine foot diseases in India were reported by Lekharu *et al.* (1991) in Haryana, Das *et al.* (1992) in West Bengal, Saikia *et al.*, (1992) in Assam, Chakrabarti (1996) in Tripura, Chakrabarti (1997) in Kerala and Bagate *et al.* (2012) in Gujarat. So far, there is no such report available in Bihar state. Therefore, the present study was undertaken to find out the incidences of foot diseases of cattle in Bihar.

## MATERIALS AND METHODS

The present study was carried out on the basis of thorough investigation of the various foot disorders of cattle in health camps conducted in different districts namely Patna, Samastipur, Katihar and Sheohar etc, institute livestock farm, animal fair, different villages and local markets in Bihar. The respective animals were examined for various foot disorders according to type of lesion, affected limb, breed, sex, age and season. In total 2791 cattle were randomly examined during the 34 month study period from June 2011 to April, 2014. Descriptive statistics was used to display the result as per Snedecor and Cochran (1989).

## RESULTS AND DISCUSSIONS

Out of 2791 number of animals 489 (17.52%) were found positive for various foot abnormalities (Table 1). Saikia *et al.* (1992) in Assam, Das *et al.* (1992) in West Bengal, Chakrabarti (1996) in Tripura and Bagate *et al.* (2012) in Gujarat found foot disorders to be 13.96%, 24.4% and 18.62% and 14.88%, respectively in cattle. The present findings are more or less comparable to the findings of previous workers. Chakrabarti (1996) opined that the incidences of foot disorders are more in north eastern hill region may be because of peculiar geo-climatic conditions of the region. In Bihar incidences of foot diseases is more may be due to poor housing management, inadequate plane of nutrition, unhygienic condition of animal shed and neglected health care systems.

### Different Types of Foot Disorders

Among the foot abnormalities highest incidence was of overgrown hooves (6.66%) followed by scissors claw (3.30%), cracked hoof (2.29%), bruising of sole (1.26%), interdigital lesions (1.11%), wound at heel/ swelling (0.97%), traumatic injury (0.64%), chronic laminitis (0.54%), interdigital growth (0.43%), acute arthritis (0.18%) and congenital defects (0.14%), respectively (Table 1). Littlejohn (1961) opined that irregular pressure in the hoof and lack of foot care are considered to be responsible for overgrown hoof and Lekharu (1976) found that along with lack of foot care negligence of hoof trimming also causative factor for overgrown hoof. The findings of Chakrabarti (1996) also are in agreement with the present observations. Mayer *et al.* (1968) observed that interdigital growth/ lesion may be due to continuous irritation at the interdigital space, injury, infection and unhygienic condition. Nigam and Singh (1980) reported 34.6% of arthritis amongst all the common foot diseases in bovine. Saikia *et al.* (1992) noticed that the overgrown hoof, scissors claw, interdigital growth were frequently observed foot disorders. Greenough *et al.* (1981) opined that the various foot disorders may be due to anatomical, nutritional and lack of proper management. Cracked hoof, traumatic injury and bruising of sole may be due to various stress factors like pulling a cart, lifting water and plough (Das *et al.*, 1992). The cracked hoof, bruising of sole, traumatic injury, swelling or wound at heel, interdigital lesions may also occur due to frequent movement in uneven concrete road and long standing in mud and water logged places or may be contact with wet and damp floor.

**Table 1: Incidence of Different Type of Foot Disorders**

Sl. No.	Types of Disorders	Animal Affected		% of Affected Out of Total Animals
		Number	Percentage	
1	Overgrown hooves	186	38.04	6.66
2	Scissors claw	92	18.81	3.30
3	Cracked hoof	64	13.09	2.29
4	Bruising of sole	35	7.16	1.26
5	Interdigital lesions	31	6.34	1.11
6	Wound at heel/ Swelling	27	5.52	0.97
7	Traumatic injury	18	3.68	0.64
8	Chronic laminitis	15	3.07	0.54
9	Inter-digital growth	12	2.45	0.43
10	Acute arthritis	5	1.02	0.18
11	Congenital defects	4	0.82	0.14
<b>Total</b>		<b>489</b>	<b>100.00</b>	<b>17.52</b>

### Involve ment of Feet

The higher incidence of foot disorders were recorded in fore feet (47.44%) than hind feet (41.31%). The incidence of both feet affected is only 11.25% (Table 2). Gibbons *et al.* (1970), Abid *et al.* (1989), Das *et al.* (1992) and Chakrabarti (1996) reported same trend whereas, Russel *et al.* (1982) reported higher incidences in hind feet of cattle. Movement of fore feet is more frequent in cattle. When animal sits, walk or run away, the movement of fore feet involves first. This may be one of the reasons for more incidences of foot disorders in fore feet. But in high yielding dairy cattle hind feet involvement may be due to carrying more weight than fore feet.

**Table 2: Foot Disorders in Relation to Foot Affected**

Sl. No.	Foot Affected	Animal Affected		% of Affected Out of Total Animals
		Number	Percentage	
1	Fore feet	232	47.44	8.31
2	Hind feet	202	41.31	7.24
3	Both feet	55	11.25	1.97
<b>Total</b>		<b>489</b>	<b>100.00</b>	<b>17.52</b>

### Disorders in Relation to Breed, Sex and Age

**Breed:** Crossbred animals are more prone to foot abnormalities than non-descript or zebu cattle. Out of 1067 crossbred animals, 24.74% were affected in comparison to 13.05% non-descript zebu cattle (Table 3). Saikia *et al.* (1992) and Chakrabarti (1996) observed low incidences of foot disorders in non-descript cattle and higher incidences in crossbred animals. Baggot and Russel (1981) also recorded significant numbers of foot affection in heavy breed i.e. in Friesian. The heavy weight and high milk yield is considered as predisposing factors in foot abnormalities. The present observations of more foot disorders in crossbred cattle may be due to high yielding crossbred animals like Holstein Friesian and Jersey than the non-descript zebu cattle.

**Table 3: Foot Disorders in Relation to Breed, Sex and Age**

<b>Variables</b>	<b>Animals</b>	<b>Number of Animals Observed</b>	<b>Number of Animals Affected</b>	<b>% of Animals Affected</b>
Breed	Crossbred (Holstein Friesian and Jersey)	1067	264	24.74
	Non-descript (Zebu)	1724	225	13.05
Sex	Male	1131	228	20.16
	Female	1660	261	15.72
Age group	Young ( below 3 years)	901	103	11.43
	Adult ( above 3 years)	1890	386	20.42

**Sex:** Male animals were affected more (20.16%) than the female counterpart (15.72%). Chakrabarti (1996) observed high percentage of males affected by foot disorders, whereas, Gogoi *et al.* (1981) observed higher foot affections in cows. But, Saikia *et al.* (1992) reported about equal chances of foot affection both in male and female animals. Results of the present study of more male animal involvement for foot disorders may be due to use of male animals for draught purposes.

**Age:** In this study higher incidence of foot disorders were observed in adult animals (20.42%) than the younger group (11.43%). The findings are in accordance with Bouchaert (1964), Simon (1966), Lekharu (1976), Saikia *et al.* (1992) and Chakrabarti (1996). They also opined that the young animals are more immune to foot abnormalities, but adult animals are more susceptible to foot diseases. Baggot and Russel (1981) found that the cows within age group of 6 to 8 years were more affected by foot affections and the reason might be due to keeping of dairy cows up to the 8<sup>th</sup> lactation after which only they are generally culled. In present observation more involvement of adults in foot diseases may be due to longer stay in uncomfortable condition in poor unhygienic housing and also more workload and age factor.

**Effects of Season:** During monsoon months (June, July and August) the incidence of foot diseases observed highest in numbers (147) followed by post-monsoon (September, October and November) 133, pre-monsoon (March, April and May) 121 and during winter (December, January and February) recorded lowest incidences (88) (Table 4). The same trend was observed in cattle by Chakrabarti (1996) in Tripura state. But, comparable data for seasonal variable in foot diseases in cattle is very scanty. However, Maoivor and Horor (1987) and Singh *et al.* (1993) observed higher incidence of foot diseases in rainy season and lowest in winter. Chakrabarti (1996) opined that the higher incidence of foot diseases during monsoon may be due to poor housing condition, increased humidity, softening of the soil and more mud and water contact. The present findings are also in accordance with earlier findings of Maeiver and Horor (1987) and Singh *et al.* (1993).

**Table 4: Foot Disorders in Relation to Season**

<b>Sl. No.</b>	<b>Season</b>	<b>Number of Animals Observed</b>	<b>Animal Affected</b>		<b>% of Affected Out of Total Animals</b>
			<b>Number</b>	<b>Percentage</b>	
1	Pre-monsoon	673	121	24.74	4.34
2	Monsoon	698	147	30.06	5.27
3	Post-monsoon	677	133	27.20	4.76
4	Winter	743	88	18.00	3.15
<b>Total</b>		<b>2791</b>	<b>489</b>	<b>100.00</b>	<b>17.52</b>

## CONCLUSIONS

It is inferred from these observations that in absence of scientific housing and nutritional management, health care and devoid of hygienic condition and lack of proper care to the animal shed may be the main reason for high prevalence of foot diseases in Bihar state in India.

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